

**REMARKS**

In this Amendment, Applicants amend the drawings, as indicated in the attached replacement sheets, and amend claims 8 and 12 to more appropriately define the present invention. Upon entry of this Amendment, claims 8 – 19 remain pending, with claims 16 – 19 withdrawn from consideration as drawn to a nonelected invention, and claims 8 – 15 under current examination.

**Procedural Issues:**

In the Office Action, the Examiner did not acknowledge Applicants' amendments to the drawings, title, or specification, made in the Amendment of September 16, 2003. Applicants respectfully request the Examiner's acknowledgement of these previously-made amendments and confirmation of their entry.

**Regarding the Drawings:**

Applicants file herewith two (2) sheets of drawings, each labeled "Replacement Sheet," containing Figs. 17 and 18. Applicants amend the drawings to change the figure number label on these two drawings, so that Fig. 17 is now labeled "Fig. 18," and vice versa.

Applicants request that these replacement sheets of drawings be made of official record in the above-identified patent application. If the drawings for any reason are not in full compliance with the pertinent statutes and regulations, please so advise the undersigned.

**Regarding the Amendments to Claims 8 and 12:**

Applicants amend claims 8 and 12 to more appropriately define the invention. Applicants submit that the amendments contain no new matter, in accordance with the requirements of 37 C.F.R. § 1.121(f).

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Applicants also direct the Examiner to the application, as originally filed, to support the amendment. Support for the amendment may be found, for example, on page 12, lines 4 – 15 of the specification.

Therefore, the amendments to the claims contain no new matter. Applicants respectfully remind the Examiner that “[a]mendments to an application which are supported in the original description are NOT new matter.” M.P.E.P. § 2163.07, emphasis in original.

Applicants submit that these amendments should render the application in condition for allowance after consideration of the remarks that follow, and should not place any burden on the Examiner insofar as raising new issues or requiring further searches of the art to reconsider these claims, as amended.

**Regarding the Office Action:**

In the Office Action, the Examiner repeated the rejection of claims 8 – 15 under 35 U.S.C. § 103(a) as unpatentable over “Applicants’ admitted prior art” (“AAPA”) in combination with Hisamune (U.S. Patent No. 6,414,352B2) and Takeuchi (U.S. Patent No. 5,907,183).

Applicants thank the Examiner for the time and courtesy in discussing the present Office Action with Applicants’ representative on December 19, 2003, when the Examiner stated that the only change between the Office Action of November 18, 2003 and the Office Action of June 24, 2003 was to replace “the typographical error of Figure 5 with Figure 15” on page 2 of the Office Action.

Applicants respectfully traverse the rejection, as detailed above, for the following reasons.

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**Regarding the Rejection of Claims 8 – 15 under 35 U.S.C. § 103(a):**

Applicants respectfully traverse the rejection of claims 8 – 15 under 35 U.S.C. § 103(a) as unpatentable over AAPA in combination with Hisamune and Takeuchi. Applicants respectfully disagree with the Examiner's arguments and conclusions, and respectfully submit that a *prima facie* case of obviousness has not been established.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Third, there must be a reasonable expectation of success. *See* M.P.E.P. § 2143.

The Examiner does not show that all the elements of Applicants' claims are met in the cited references, does not show that there is any suggestion or motivation to modify the cited references to result in the claimed invention, and does not show there would be any reasonable expectation of success from so doing.

**Prior Art Reference Must Teach or Suggest All the Claim Elements**

Applicants respectfully point out that the first requirement for establishing a *prima facie* case of obviousness has not been established: namely, AAPA, whether taken alone or in combination with Hisamune and Takeuchi, does not teach or suggest each and every element of Applicants' claimed invention. This is evidenced, not only by the Examiner's admission of the deficiencies pointed out in AAPA (Office Action, p. 2), but also from the arguments that follow.

To begin, Applicants' independent claims 8 and 12 recite, among other things, "generating an oxidizing gas containing one of ozone and oxygen radicals, the oxygen radicals

being generated by converting an oxygen containing gas into plasma state or by reacting a first gas containing oxygen and a second gas containing hydrogen.”

To explain how Applicants’ claimed invention is distinguishable from AAPA, Hisamune, and Takeuchi, Applicants raise the following points. In contrast to the present invention, in Hisamune’s thermal oxidation process (*See* Hisamune’s col. 2, line 55, to col. 3, line 29), only a small amount of oxygen radicals are generated. A thermal oxidation process is a process included in the method of reacting an oxygen molecule (O<sub>2</sub>) with silicon to form a silicon oxide film, but it is not related to a method of reacting oxygen *radicals* with silicon to form a silicon oxide film. In other words, a thermal oxidation process is not a process in which a large amount of oxygen radicals are positively generated. Therefore, Hisamune’s method does not enable sufficient oxidization of the surface of an insulating film containing silicon and nitrogen by oxygen radicals, and is therefore different from the present claimed invention.

Furthermore, the Examiner included Takeuchi to disclose “ten conventional examples for Si-N bonds...” (Office Action, p. 3). Takeuchi’s stacked films (*See* Takeuchi, Abstract, generally) do not serve to cure the deficiencies of AAPA and/or Hisamune when applied to Applicants’ independent claims 8 and 12, discussed above.

Applicants therefore submit that AAPA in combination with Hisamune and/or Takeuchi fails to teach or suggest all the elements of Applicants’ independent claims 8 and 12. This clearly demonstrates how AAPA, Hisamune, and Takeuchi are different from the present invention as claimed. AAPA, Hisamune, and Takeuchi, taken alone or in combination, still do not combine to teach or suggest at least the above-quoted elements of Applicants’ independent claims 8 and 12.

Therefore, the Examiner's application of AAPA, Hisamune, and Takeuchi as references does not satisfy the tenants of a proper 35 U.S.C. § 103(a) rejection. The Examiner has therefore not met an essential criteria for establishing a *prima facie* case of obviousness, wherein "the prior art reference (or references when combined) must teach or suggest all the claim limitations." See M.P.E.P. §§ 2142, 2143, and 2143.03.

*Lack of Suggestion or Motivation to Modify or Combine Reference Teachings  
for Prima Facie Obviousness*

The M.P.E.P. sets forth:

"However, "The mere fact that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness. *The prior art must provide a motivation or reason for the worker in the art, without the benefit of appellant's specification, to make the necessary changes in the reference device.*" *Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984)." M.P.E.P. § 2144.04, italics added.

As such, the present invention, as recited in independent claims 8 and 12, cannot be attained based merely on AAPA, or on a combination of AAPA with either or both of Hisamune and Takeuchi. One skilled in the art would only arrive at the present claimed invention by consulting Applicants' disclosure. Therefore, the only way to construct the claimed invention from the cited references would be to rely on aspects related to the present invention. Such reliance, however, would constitute improper hindsight reasoning. Applicants submit that these references, while all concerned with semiconductor devices, still do not combine to produce the claimed elements of the present invention. Applicants have already demonstrated that a worker in the art would not have been able to properly combine parts of AAPA, Hisamune, and Takeuchi to produce Applicants' claimed invention, and the combination of these references still

would not teach or suggest at least the above-quoted elements of Applicants' independent claims 8 and 12. Second, Applicants note that one of ordinary skill in the art must have this motivation or reason *without the benefit of Applicants' specification* to modify the references.

As already demonstrated, such combination of these references *a priori* fails to establish obviousness of the claimed invention. Furthermore, Applicants have pointed out deficiencies in the cited prior art that render nugatory any indication that the cited references would give any motivation or reason to one of ordinary skill in the art to modify them *without the benefits of Applicants' specification*.

Moreover, the object to be oxidized, as defined in Applicants' claims 8 and 12, is "an insulating film containing silicon and nitrogen" (See Applicants' claims 8 and 12), while in Hisamune it is a silicon substrate or gate material, such as polycrystalline silicon (See Hisamune's col. 3, lines 2 – 3). Hence, the object to be oxidized, as defined in Applicants' claims 8 and 12, and the object oxidized in Hisamune, are completely different. Therefore, one of ordinary skill in the art at the time of the present invention would not have any motivation from within Hisamune to modify it to achieve the present claimed invention.

Therefore, Applicants submit that AAPA, Hisamune, and/or Takeuchi do not suggest the desirability of any modification which would result in Applicants' claimed invention.

*Lack of Reasonable Expectation of Success for Prima Facie Obviousness*

In addition, regarding the required reasonable expectation of success, as evidenced from previous arguments regarding AAPA, Hisamune, and Takeuchi, Applicants submit that there would be no reasonable expectation of success to be derived from modifying AAPA with either or both of Hisamune and Takeuchi, as this would diverge at least from the elements of

Applicants' independent claims 8 and 12. This also demonstrates that the Examiner's reliance on AAPA, Hisamune, and Takeuchi is not sufficient to establish *prima facie* obviousness.

Since Applicants have already demonstrated: (1) deficiencies in the cited references, (2) that they are not combinable to produce the present claimed invention, and (3) that they do not provide any suggestion or motivation to produce the present claimed invention, it logically flows that there would be no reasonable expectation of success expected by one of ordinary skill in the art when combining AAPA, Hisamune, and Takeuchi.

In summary, the Examiner has not met any of the essential criteria for establishing a *prima facie* case of obviousness. Applicants have demonstrated above that the Examiner: (a) has not shown that all recitations of Applicants' claimed invention are taught or suggested by AAPA, Hisamune, and Takeuchi; (b) has not shown any requisite suggestion or motivation to modify AAPA, Hisamune, and Takeuchi to produce Applicants' claimed invention; and (c) has not shown there would be any reasonable expectation of success from modifying AAPA, Hisamune, and Takeuchi in order to produce the present claimed invention. Thus, Applicants submit that the Examiner's reliance on these references fails to establish *prima facie* obviousness.

Therefore, Applicants submit that independent claims 8 and 12 are allowable, for the reasons argued above.

Regarding dependent claims 9 – 11 and 13 – 15:

Finally, Applicants note that the M.P.E.P. sets forth that "[i]f an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious."

M.P.E.P. § 2143.03. Therefore, Applicants submit that independent claims 8 and 12 are allowable, for the reasons argued above. In addition, dependent claims 9 – 11 and 13 – 15 are also allowable at least by virtue of their respective dependence from allowable base claims 8 and

12. Therefore, Applicants respectfully submit that the Examiner should withdraw the 35 U.S.C. § 103(a) rejection.

**Conclusion:**

In making various references to the specification and drawings set forth herein, it is understood that Applicants are in no way intending to limit the scope of the claims to the exemplary embodiments described in the specification and illustrated in the drawings. Rather, Applicants expressly affirm that they are entitled to have the claims interpreted broadly, to the maximum extent permitted by statute, regulation, and applicable case law.

In view of the foregoing, Applicants request reconsideration of the application and submit that the objections and rejection detailed above should be withdrawn. Applicants submit that pending claims 8 – 15 are in condition for allowance, and request a favorable action.

Should the Examiner continue to dispute the patentability of the claims after consideration of this Amendment, Applicants encourage the Examiner to contact Applicants' undersigned representative by telephone to discuss any remaining issues or to resolve any misunderstandings. Applicants' undersigned representative would welcome the opportunity to discuss the merits of the present invention with the Examiner if telephone communication will aid in advancing prosecution of the present application.

Please grant any extensions of time under 37 C.F.R. § 1.136 required in entering this response. If there are any fees due under 37 C.F.R. § 1.16 or 1.17 including any fees required for

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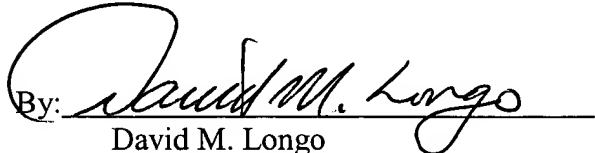


an extension of time under 37 C.F.R. § 1.136, please charge such fees to our deposit account 06-0916.

Respectfully submitted,

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